IMPRS Bootcamp: Holography

GQFI

Format:

09:30 - 10:30 Lecture 1

10:30 - 10:45 Break

10:45 - 11:45 Lecture 2

11:45 - 12:30 Lunch break

12:30 - 13:45 Tutorial

Schedule:

Mon 20.11.17

Lecture 1 Holography: motivation, basic notions and road map for the course (M. Heller)

Lecture 2 Operator dictionaries [1], holographic RG [2, 3] (D. Das)

Tutorial

Homework

Wed 22.11.2017

Lecture 1 AdS-Schwarzschild, thermofield double, entanglement entropy, holographic complexity (R. Jefferson)

Lecture 2 Checks of holography [4] (D. Das)

Tutorial

Homework

Fri 24.11.2017

Lecture 1 Bulk reconstruction: emergent spacetime, HKLL, Ryu-Takayanagi, QEC (R. Jefferson)

Lecture 2 Applied holography + summary and open problems (M. Heller)

Tutorial QEC (F. Pastawski)

GQFI Group Seminar (14:30) Román Orús: *Overview: from (many) qubits to spacetime*

References

[1] D. Harlow and D. Stanford, *Operator Dictionaries and Wave Functions in AdS/CFT and dS/CFT*, arXiv:1104.2621 [hep-th].

[2] I. Heemskerk and J. Polchinski, *Holographic and Wilsonian Renormalization Groups*, *JHEP* **06** (2011) 031, arXiv:1010.1264 [hep-th].

[3] D. Das, S. R. Das, and G. Mandal, *Double Trace Flows and Holographic RG in dS/CFT correspondence*, *JHEP* **11** (2013) 186, arXiv:1306.0336 [hep-th].

[4] S. R. Das, *Holographic Quantum Quench*, *J. Phys. Conf. Ser.* **343** (2012) 012027, arXiv:1111.7275 [hep-th].